BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: BTECH **SEMESTER : V**
BRANCH: MECHANICAL **SESSION : MO/2022**

SUBJECT: ME337 NON-DESTRUCTIVE TESTING

TIME: 3:00 Hours **FULL MARKS: 50**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a)	Define non-destructive testing.	[2]	CO1	BL1
Q.1(b)	Describe the desirable properties of a developer in liquid penetrant inspection technique.	[3]	CO1	BL2
Q.1(c)	Distinguish between water-washable, post-emulsification and solvent-removable systems in liquid penetrant inspection.	[5]	CO1	BL4
Q.2(a)	List the cases where eddy current testing method does not prove to be beneficial.	[2]	CO2	BL1
Q.2(b)	Outline the steps for evaluation of radial defects in large rings using magnetic particle inspection.	[3]	CO2	BL4
Q.2(c)	Demonstrate the use of eddy current probe for examination of tubes or holes or bolt-holes in plates.	[5]	CO2	BL3
Q.3(a)	Describe with a neat sketch the production of X-rays in an X-ray tube.	[5]	CO3	BL2
Q.3(b)	Demonstrate the use of penetrameters to indicate quality of radiographs.	[5]	CO3	BL3
Q.4(a)	Differentiate between normal probe transmission and reflection method along with their advantages and disadvantages.	[5]	CO4	BL4
Q.4(b)	Formulate the steps of investigation of flaws in butt joint and fillet welds using the ultrasonic testing methodology.	[5]	CO4	BL5
Q.5(a)	List the causes of introduction of defects in a component during its service along with the general types of failures observed.	[2]	CO5	BL1
Q.5(b)	Describe three types of defects that are observed in castings along with their causes.	[3]	CO5	BL2
Q.5(c)	Summarize the applications, types of discontinuities, advantages and disadvantages of magnetic particle inspection for detection of flaws.	[5]	CO5	BL4

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